CLAIMS

1. An optical semiconductor component comprising:

a semiconductor substrate; and

a packaging material located over the semiconductor substrate and comprised of an optically transparent cycloaliphatic polymer.

2. The optical semiconductor component of claim 1 further comprising:

wire bonds located over and coupled to the semiconductor substrate,

wherein:

the optically transparent cycloaliphatic polymer encapsulates the wire bonds.

3. The optical semiconductor component of claim 1 further comprising:

an optical image sensor supported by the semiconductor substrate,

wherein:

the optical image sensor is capable of detecting an optical image passing through the optically transparent cycloaliphatic polymer.

4. The optical semiconductor component of claim 1 further comprising:

an optical image transmitter supported by the semiconductor substrate,

wherein:

the optical image transmitter is capable of transmitting an optical image through the optically transparent cycloaliphatic polymer.

5. The optical semiconductor component of claim 1 further comprising:

an optical image device supported by the semiconductor substrate; and

an integrated circuit supported by the semiconductor substrate and located adjacent to the optical image device.

6. The optical semiconductor component of claim 5 wherein:

the integrated circuit is electrically coupled to the optical image device; and

the optically transparent cycloaliphatic polymer is located over the integrated circuit.

7. The optical semiconductor component of claim 1 further comprising:

an optical image device supported by the semiconductor substrate,

wherein:

the optically transparent cycloaliphatic polymer covers and protects the optical image device.

8. The optical semiconductor component of claim 1 wherein:

the optically transparent cycloaliphatic polymer has a modulus of less than approximately 20 MegaPascals and a coefficient of thermal expansion of less than 60 parts per million per degree Celsius.

9. The optical semiconductor component of claim 1 wherein:

the optically transparent cycloaliphatic polymer has an optical transparency of at least 90 percent throughout a visible spectrum.

10. The optical semiconductor component of claim 1 wherein:

the optically transparent cycloaliphatic polymer comprises a bicyclic compound comprising at least seven carbon atoms.

11. The optical semiconductor component of claim 10 wherein:

the bicyclic compound comprises only seven to eight carbon atoms and a plurality of hydrogen atoms.

12. The optical semiconductor component of claim 11 wherein:

the optically transparent cycloaliphatic polymer further comprises an alkyl chain coupled to the bicyclic compound.

13. The optical semiconductor component of claim 1 wherein:

the optically transparent cycloaliphatic polymer is comprised of polynorbornene.

14. The optical semiconductor component of claim 1 wherein:

the optically transparent cycloaliphatic polymer is comprised of polybicyclo[2.2.2]oct-2-ene.

15. An image sensor integrated circuit component comprising:

a lead frame;

a semiconductor substrate mounted over the lead frame;

an optical image sensor supported by the semiconductor substrate; and

a packaging material comprised of an optically transparent cycloaliphatic polymer and covering the semiconductor substrate, the optical image sensor, and at least a portion of the lead frame,

wherein:

the optical image sensor is capable of detecting an optical image passing through the optically transparent cycloaliphatic polymer.

16. The image sensor integrated circuit component of claim 15 further comprising:

wire bonds coupling the optical image sensor to the lead frame,

wherein:

the optically transparent cycloaliphatic polymer encapsulates the wire bonds and protects the optical image sensor and the wire bonds from contamination and physical damage.

17. The image sensor integrated circuit component of claim 15 wherein:

the lead frame and the packaging material form an optical, quad flat-pak, lead-less package.

18. The image sensor integrated circuit component of claim 15 wherein:

the optically transparent cycloaliphatic polymer has a modulus of less than approximately 20 MegaPascals, a glass transition temperature of greater than approximately 150 degrees Celsius, a coefficient of thermal expansion of less than 60 parts per million per degree Celsius, an optical transparency of at least 90 percent throughout a visible spectrum, and a viscosity of less than approximately 100 centiPoise.

19. The image sensor integrated circuit component of claim 15 wherein:

the optically transparent cycloaliphatic polymer comprises a bicyclic compound having seven to twelve carbon atoms.

20. The image sensor integrated circuit component of claim 15 wherein:

the optically transparent cycloaliphatic polymer is comprised of a material selected from the group consisting of polynorbornene and polybicyclo[2.2.2]oct-2-ene.

21. A method of manufacturing an optical semiconductor component comprising:

providing a semiconductor substrate; and

disposing a packaging material over the semiconductor substrate and comprised of an optically transparent cycloaliphatic polymer.

22. The method of claim 21 further comprising:

mixing a monomer of the optically transparent cycloaliphatic polymer with a catalyst to create at least a portion of the packaging material.

23. The method of claim 22 further comprising:

providing the catalyst comprised of a Ziegler-Natta catalyst; and

providing the monomer comprised of a bicyclic compound having at least seven carbon atoms.

24. The method of claim 22 further comprising:

providing the monomer comprised of a material selected from the group consisting of norbornene and bicyclo[2.2.2]oct-2-ene.

25. The method of claim 22 further comprising:

filtering the packaging material.

26. The method of claim 25 wherein:

disposing the packaging material further comprises:

applying the packaging material over the semiconductor substrate after filtering the packaging material.

27. The method of claim 26 further comprising:

curing the packaging material after applying the packaging material.

28. The method of claim 22 further comprising:

mounting the semiconductor substrate over a lead frame,

wherein:

disposing the packaging material further comprises:

applying the packaging material over at least a portion of the lead frame; and

forming an optical, quad flat-pak, lead-less package.

29. The method of claim 22 further comprising:

curing the packaging material.